

Claims

What we claim is:

1. A microelectronic device comprising:

an integrated circuit device having first and second conductive bond pads disposed on a surface of said integrated circuit device, said first conductive bond pad being spaced apart from and proximate to said second conductive bond pad, said first and second conductive bond pads being both in electrical connection with said integrated circuit device; and

a first conductive stud ball bonded to said first conductive bond pad, a second conductive stud ball bonded to said second conductive bond pad, and a third conductive stud ball bonded to said first and second conductive stud balls, said third conductive stud ball electrically connecting said first and second conductive bond pads.

2. The microelectronic device of claim 1 wherein said first and second conductive bond pads are separated by a distance of about 60 microns.

3. The microelectronic device of claim 1 wherein each of said bond pads has dimensions of about 80 microns by 80 microns.

4. The microelectronic device of claim 1 wherein said conductive bond pads are aluminum.

5. The microelectronic device of claim 1 wherein said conductive stud balls are gold.

6. The microelectronic device of claim 1 wherein said conductive bond pads are copper.

7. The microelectronic device of claim 1 wherein said conductive stud balls are copper.

8. The microelectronic device of claim 1 wherein said conductive stud balls are gold and said conductive bond pads are gold.

9. The microelectronic device of claim 1 wherein said conductive stud balls are copper and said conductive bond pads are copper.

10. The microelectronic device of claim 1 wherein said conductive stud ball has a diameter of 2mm and a thickness of approximately 1.5mm.

11. The microelectronic device of claim 1 further comprising a substrate upon which said microelectronic device is mounted.

12. A method of forming an electrical connection between first and second proximate conductive bond pads disposed on and electrically coupled to an integrated circuit device having circuits, comprising:

bonding a first conductive stud ball to said first conductive bond pad;

bonding a second conductive stud ball to said second conductive bond pad; and

electrically connecting said first and second conductive bond pads by bonding a third conductive stud ball to said first and second conductive stud balls.

13. The method according to claim 12 wherein bonding said first and second conductive stud balls to said first and second conductive bond pads includes utilizing a wire bonding tool in a stud ball bonding mode.

14. The method according to claim 13 further comprising placing said wire bonding tool in a stud ball bonding mode before bonding said first, second and third conductive stud balls and placing said wire bonding tool in a standard bonding mode after bonding said first, second and third conductive stud balls.

15. The method according to claim 12 further comprising thermo-sonically bonding said first, second and third conductive stud balls.

16. The method according to claim 12 further comprising ultrasonically bonding said first, second and third conductive stud balls.

17. The method according to claim 12 further comprising compression bonding said first, second and third conductive stud balls.

18. The method according to claim 12 further comprising electrically connecting said integrated circuit structure to a substrate with a wire bonding tool in a standard bonding mode.

19. The method according to claim 12 wherein said first, second, and third conductive stud balls are gold.

20. The method according to claim 12 wherein said first and second conductive bond pads are aluminum.

21. The method according to claim 12 further comprising selecting said first and second conductive bond pads from a plurality of bond pads disposed on said integrated circuit device.

22. A microelectronic device assembly comprising:
 a microelectronic device having a first circuit structure, a first conductive bonding pad electrically coupled to the first circuit structure, a second circuit structure, and a second conductive bonding pad electrically coupled to the second circuit structure;
 a first conductive stud ball bonded to said first conductive bonding pad;
 a second conductive stud ball bonded to said second conductive bonding pad;
 a third conductive stud ball bonded to said first and second conductive stud balls; and
 a substrate electrically connected to said microelectronic device.

23. The microelectronic device assembly of claim 22 wherein said conductive stud balls are gold.

24. The microelectronic device assembly of claim 22 wherein said conductive bonding pads are aluminum.

25. The microelectronic device assembly of claim 22 wherein said conductive bonding pads are proximate to one another.

26. The microelectronic device assembly of claim 22 wherein said third conductive stud ball is disposed in between said first and second conductive stud balls.

27. The microelectronic device assembly of claim 22 wherein said microelectronic device is an integrated circuit chip.